

Criticality Safety Training for INL Firefighters

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INL Firefighters



- **Primary site-wide responders (non-security)**
 - on-scene incident command (non-security)
 - fire, smoke, explosion
 - search & rescue
 - HAZMAT
 - EMT
- **Cover large, diverse, remote area**
- **Often the first official on-scene responders**



Components

- **Required one-time web-based training (WBT)**
- Required WBT updates (as needed)
- **Required, periodic evolutions**
- **Required, periodic facility & pre-incident plan orientation**
- Optional meetings (informal)
- **Optional study guide**

WBT Design Requirements

- **Satisfy requirement**

together with other components, provide sufficient knowledge to discharge assignments safely

- **Always available**

<https://secure.inl.gov/extraining/>

user name: 1

password: criticality

[old templates]

- **Cover NCS basics with a tailored emphasis**

- include reasons for taking the course
- omit factors firefighters can/do *not* affect
- acknowledge overlap with other training

WBT Design Requirements (continued)

- **Memorable/interesting**
 - relate to response actions
 - prefer to be short
 - colorful graphics
 - animations
 - interactive examples
 - photos of our firefighters
 - clearly marked additional information

Did You Know ...

Been There. Done That.



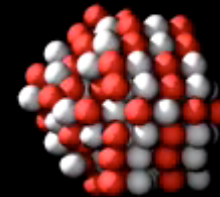
WBT Modules

1. The Atom and Its Particles

- atomic structure
- neutron interactions

2. Fission and Criticality

- fission
click on picture to animate
- chain reactions
- fissionable material



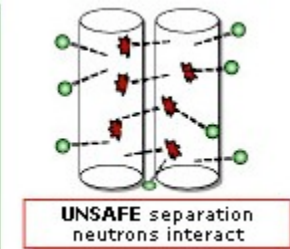
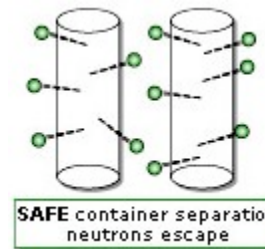
WBT Modules (continued)

3. Criticality Control Factors and Controls

- moderation
- reflection
- geometry
- interaction
- criticality control areas
- subcritical under normal and credible abnormal conditions



or



WBT Modules (continued)

4. Health Effects & Protection

- factors that affect dose

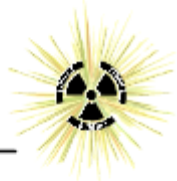
*click arrows and/or times
to animate example*

- initial symptoms
- other medical consequences
- who is assigned to identify accident victims

Reducing Dose Example 3

In addition to changing the distance from a critical source, you can also change the exposure time to see how both factors affect your dose.

**5000
REM**



Feet 20 10 2 1



Time 1 min. 5 min. 10 min. 15 min. 60 min.

60 Minutes



WBT Modules (continued)

5. Emergency Response

- **criticality accident features**
- **criticality alarm systems**
- **responding to a criticality alarm**

MFC  

RTC  

- **reentry**



WBT Response

- **Launched February 2007**
- **All currently-qualified firefighters have completed**
- **More tailoring needed**
- **Favorable reactions**

“It was the best online training that I have taken at the INL.” □

“Excellent, great information.”



“This was the best online training that I have done. I liked the historical information. I thought that it helped the learning process.”

Required, Periodic Evolutions

- part of general, in-field training
- some already exist in some form
 - NCS needs to review, might need to tailor
- subjects
 - fire fighting in areas with extinguishing agent restrictions
 - response in areas with configuration control issues
 - rescue when a criticality alarm has sounded
 - EMT response when a criticality alarm has sounded

Required Facility Familiarity

- part of firefighter general training
- facility orientation
 - participate in periodic inspections
 - periodically review pre-incident plans
- familiarity with retrieving maps, material inventories, etc. when responding

Pre-incident Plan

| Fire Department | STRUCTURE # | Identifier |
|----------------------|---------------|----------------|
| Fire Department Name | BUILDING NAME | Permanently |
| Address | Address | Page |
| Location | Location | Effective Date |

1. ADDRESS

Street:

Map Grid:

Location:

On Scene Command Location:

2. BUILDING DESCRIPTION

3. OCCUPANCY HAZARD CATEGORY

4. BUILDING CONSTRUCTION

Building Construction Type:

Floors/Basements:

Fire Areas:

Construction Materials:

Entrances:

Special Features:

5. FIRE SUPPRESSION SYSTEMS

Suppression Systems:

System Coverage:

Zone Protection Control Valves:

Riser Location:

Fire Alarm:

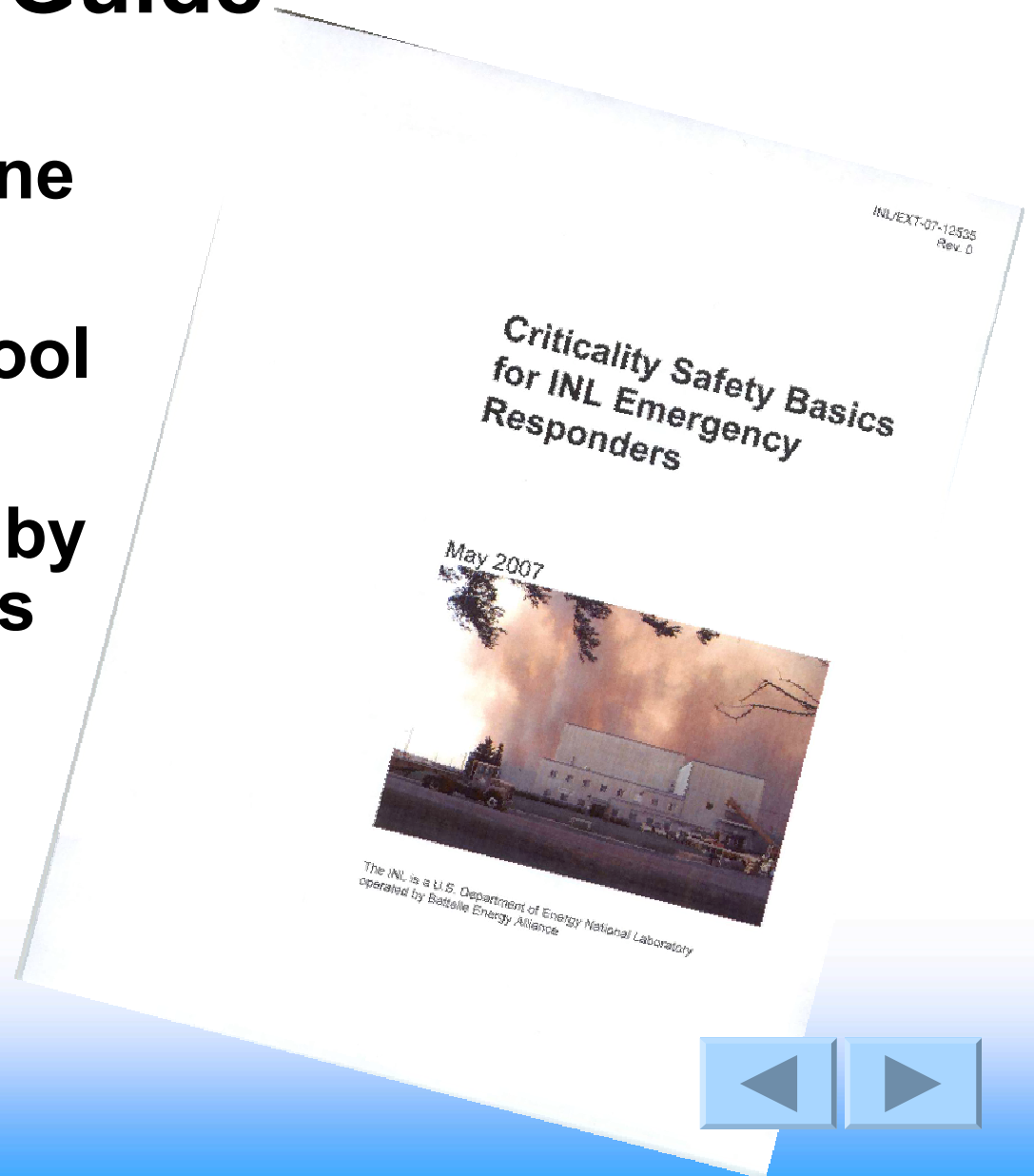
Optional, Periodic Meetings

- informal
- firefighters & criticality safety personnel
- Q&A session
- chance to discuss WBT, a particular facility, evolution, or other issue



Optional Study Guide

- follows WBT outline
- review/reminder tool
- expanded for use by all first responders



Future

- **informal meetings**
- **review & update**
 - pre-incident plans
 - evolutions
- **tailor WBT & guide more**
- **solicit feedback**
- **improve**



Questions?

